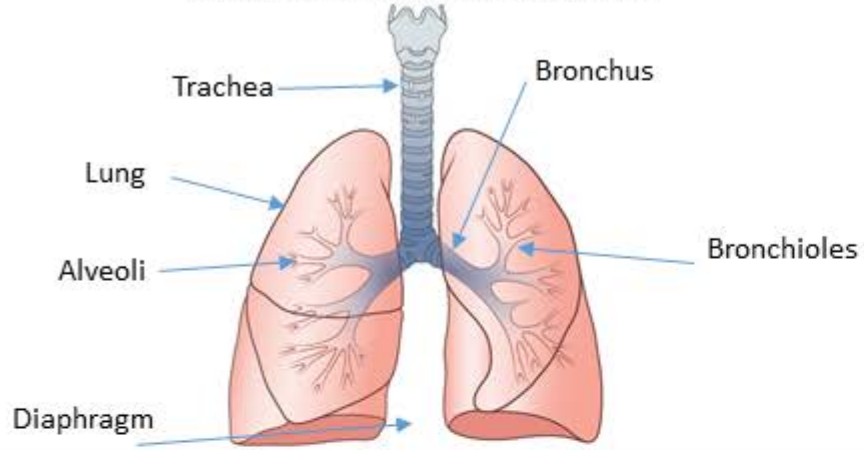
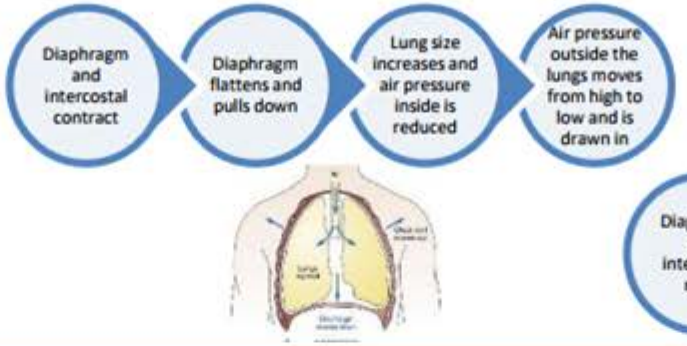
TURTON SCHOOL YR10 PE KNOWLEDGE ORGANISER – TOPIC 1.2.6/7/8/9 : THE RESPIRATORY SYSTEM

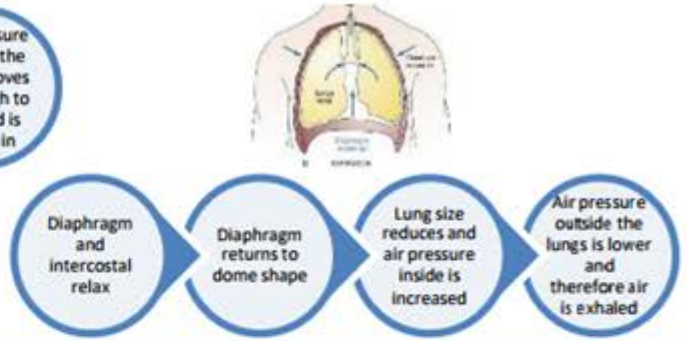
Structure of the Respiratory System



Inhalation



Exhalation



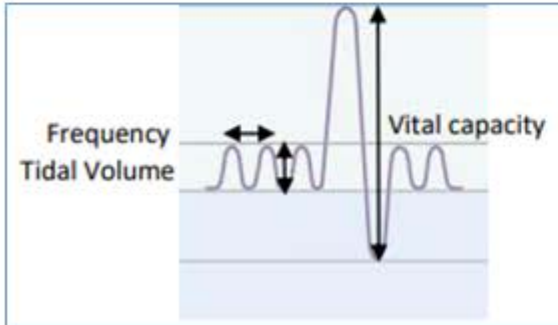
Respiratory Values

Tidal Volume – the amount of air inhaled and exhaled per breath Resting value = 500ml

Vital Capacity- The maximum amount of air exhaled following a maximal breath in.

Frequency – The number of breaths taken per minute. Resting value – 12-20 breaths

Minute Ventilation – The amount of air inhaled and exhaled per minute. Measured in litres.



Composition of inhaled and exhaled air

Gas	Inhaled air	Exhaled air
Oxygen	21%	16%
Carbon dioxide	0.04%	4%
Nitrogen	78%	78%

Gaseous exchange at the alveoli

- Diffusion is the movement of molecules from an area of high concentration to a low one.
- The alveoli have thin moist walls to allow diffusion to occur.
- Capillaries are closely wrapped around the alveoli to reduce the distance of diffusion and increase efficiency.

During inhalation:

- The concentration of oxygen is air is higher than the alveoli.
- The concentration of carbon dioxide in the blood is higher than that in the air.

During exercise : Gaseous exchange increases as the intensity of the activity increases to cope with:

- An increase demand for oxygen at working muscles
- An increase in carbon dioxide production and the need to rid this waste product.

Frequency ⬆ + Tidal Volume ⬆

Training increases total lung capacity and vital capacity readings.